



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/200,495	11/25/1998	PETER C. VAN BUSKIRK	2771-337(PC8	4898

7590

02/05/2002

STEVEN J HULTQUIST
INTELLECTUAL PROPERTY/ TECHNOLOGY LAW
PO BOX 14329
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

HU, SHOUXIANG

ART UNIT	PAPER NUMBER
----------	--------------

2811

DATE MAILED: 02/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/200,495

Applicant(s)
Buskirk et al.

Examiner
First Last

Art Unit
1234



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Nov 27, 2001
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-55 and 61-63 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-55 and 61-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other: _____

Art Unit: 2811

DETAILED ACTION

Claim Objections

1. Claims 40 and 63 are objected to because of the following informalities/defects:

The term of "abstracted" in claims 1 and 63 should read as --extracted--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 40-55 and claims 61-63 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 40 and 63 recite the subject matter that the ferroelectric oxide or high ϵ oxide material is "stoichiometrically complete in oxygen content throughout" or "stoichiometrically satisfied in oxygen content throughout." But, it implies that the oxygen concentration throughout the ferroelectric oxide or high ϵ oxide material is

Art Unit: 2811

completely stoichiometric, which is not supported by the specification, even though the specification supports the subject matter that the ferroelectric oxide or high ϵ oxide material at the upper surface and the vicinity thereof is substantially stoichiometrically complete in oxygen concentration (see page 5, lines 18-20, and page 7, lines 20 and 21).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

5. Claims 40-43, 45-47, 49-55, and 63, insofar as in compliance with 35 U.S.C.112, are rejected under 35 U.S.C. 102(e) as being anticipated by Inoue et al. ("Inoue"; 6,300,212).

Inoue discloses a ferroelectric or high ϵ capacitor in a microelectronic device (Fig. 15), comprising: a bottom electrode (18); a thin film of ferroelectric or high ϵ material (19; PZT, PLZT, or SBT, see col. 17, lines 51-53); and a top electrode (20), wherein the top and bottom electrodes are formed of a material selected from Pt, Ir or Ir oxide (see col. 17, lines 58-65), and the top electrode is formed through sputtering in

Art Unit: 2811

the presence of oxygen (see col. 11, lines 1-4, and col. 17, lines 61-65). It is noted that the top electrode layer in Inoue inherently does not contain oxygen content extracted from the thin film of ferroelectric or high ϵ material underneath, and the oxygen concentration in the ferroelectric or high ϵ material is substantially stoichiometric, because the change in quality or oxygen concentration in the ferroelectric or high ϵ material is effectively prevented (see col. 11, lines 1-4, and col. 17, lines 61-65).

Regarding the limitations recited in claims 54 and 55 on how the top electrode is deposited, these limitations would not carry patentable weight in those claims drawing to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985). claims 54 and 55,

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 44, 48, 61 and 62, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. ("Inoue"; 6,300,212) in view of Fukuzumi et al. ("Fukuzumi"; 6,020,643).

Art Unit: 2811

The disclosure of Inoue is discussed as applied to claims 40-43, 45-47, 49-55, and 63 above.

Although Inoue does not expressly disclose that the ferroelectric film material can be formed with materials of barium and/or strontium titanate, and that Pt oxide, Rh or Rh oxide can be used as the top electrode, one of ordinary skill in the art would readily recognize that the ferroelectric film material in a capacitor can be formed with materials of barium and/or strontium titanate, and that Pt, Rh, and their oxides are among the commonly used materials for the top electrode layer, as evidenced in Fukuzumi (see col. 12, lines 26-35)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the microelectronic device of Inoue with the ferroelectric film being formed with materials of barium and/or strontium titanate, and/or with the top electrode being formed of Pt oxide, Rh or Rh oxide, as taught in Fukuzumi, so that a ferroelectric capacitor with desired performance would be obtained.

Response to Arguments

8. Applicant's arguments with respect to claims 40-55 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2811

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 or 308-7724. The

Art Unit: 2811

Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Shouxiang Hu** whose telephone number is **(703) 306-5729**. The examiner can normally be reached on Monday through Thursday from 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Tom Thomas**, can be reached on **(703) 308-2772**. The appropriate fax phone number for the organization where this application or proceeding is assigned is **(703) 308-7724**.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **(703) 308-0956**.

Shouxiang Hu
January 29, 2002

Steven Loke
Primary Examiner

